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Single Tunnel Arthroscopic Assisted PCL Reconstruction – Novel Femoral Garft Fixation – Preliminary Results

From the Orthopedic Dept. Asaf Harofe medical center, Tzrifin

G. Agar, A. Gordin, N. Halperin and Y. Beer

Objectives

1. To describe surgical technique for Femoral graft fixation during Single Tunnel Arthroscopic assisted posterior cruciate ligament (PCL) reconstruction.
2. To report on preliminary results of 12 patients treated with that technique

Background

Arthroscopic assisted PCL reconstruction is a highly demanding technical operation. Any shortcut in the operative steps may reduce the operative time, avoid complications and make the surgeon life easier. The femoral canal imposes several hazards: killing angle, fracture of the medial femoral condyle (MFC)., imprecise site at the PCL femoral footprint.

Design/Methods From 2004 to 2005, 12 endoscopic single tunnel PCL reconstructions using quadrouple autogenous hamstring tendons were performed. An Anterior cruciate ligament (ACL) reconstruction drill system (DePuy Mitek RIGIDFIX Cross Pin System) has been modified to allow retrograde femoral drilling starting from inside the notch. The operation is begun with arthroscopy to asses the cruciate ligaments and treat any meniscial and articular cartilage lesions using infero-lateral, infero-medial and postero-medial portals. Torn PCL is debribed from the tibial insertion site, however, intact PCL bundles (usually the postero-medial bundle) are left in place. Tibial tunel is drilled using a predetermined length jig, 10~12 mm below the intercondylar eminence level under arthroscopic view. The femoral PCL insertion site is marked with a radiofrequency probe at the notch border of the cartilage of the

MFC. The MFC is drilled from the notch to the Medial Femoral cortex. Drill diameter is according to graft size. Care is taken to avoid injury to the lateral Femoral condyle. The RIGIDFIX Cross Pin jig is inserted through the infero-lateral portal. Two cross pin sleeves are drilled into the MFC in antero-posterior direction in order to avoid damage to weight bearing surface. Several #5 Etibond threads are passed through the tunnels to smoothen the killing angles (Tibial and Femoral) and assure clearance from any soft tissue that might interfere with graft passage. The graft is inserted from the Tibial tunnel into the joint and into the Femoral tunnel. Tibial fixation is done first with absorbable interference screw. Femoral fixation is done next with absorbable cross pins in 90 degrees flexion and anterior drawer manoeuvre.

Results

The knees were assessed before and after surgery with physical examination, Lisholm knee ligament rating scale and stress radiography. In 10 cases posterolateral reconstruction was performed. ACL reconstruction was performed in two cases of knee dislocation (one acute case). One case was a revision reconstruction. Immediate fixation was achieved in all cases. At 3 months follow up examination the posterior drawer has improved from ++ to normal in 10 cases, ++ to + in one case and remained ++ in one case (the revision case). Subjective scales improved in 11 patients. There were no complications.

Discussion: Preliminary patient outcomes are comparable to other fixation methods. In comparison to other fixation methods, this technique is beneficial in terms of facility of execution and decreased operative time.